

**NATIONAL ELECTRICAL TEST FACILITY  
(NETFA)**





## National Electrical Test Facility

South Africa's National Electrical Test Facility (NETFA) is the largest, independent test facility for power utilities and the electro-technical industry, within Africa. NETFA is part of the suite of test laboratories at the South African Bureau of Standards (SABS) and has been providing services since the 1980s.

The facility is accredited by the South African National Accreditation System (SANAS), in accordance with the international standard, ISO/IEC 17025:2005 General requirements for the competence of testing and calibration of laboratories. SANAS accreditation is aligned to the International Laboratory Accreditation Cooperation (ILAC).

A vast range of electrical distribution and transmission equipment can be tested at the facility by SABS-NETFA technical experts. SABS-NETFA independent and impartial laboratories include the following:

- short circuit laboratory
- high voltage laboratory
- materials & installation laboratories
- distribution technology services

The NETFA laboratories are equipped with technology that is unique in Africa and the Southern Hemisphere and Africa.



## Our Customers

NETFA provides services to a range of customers, such as; electrical equipment manufacturers, utility suppliers, consumers of electrical products, distributors of electrical equipment, utilities in Africa and India, mines and municipalities. Customers also include national regulators such as the National Regulator for Compulsory Specifications (NRCS), the National Energy Regulator (NERSA), the Department of Mineral Resources (DMR) and others.

Our customer base extends beyond South Africa and the region and we are the preferred test facility for a number of international companies. Our location, accessibility and commitment to reliable testing continues to make NETFA one of the top test facilities.

***“Our laboratories are equipped with technology that is unique in Africa and the Southern Hemisphere and Africa. .”***

# What We Do

As the foremost electrical test facility in Africa, NETFA is recognised and acknowledged worldwide for its testing, its range of testing capabilities at one location, its reputation for consistent test procedures and its technical experts. While there is a vast range of equipment and product testing that is conducted at the facility, some of the unique features include:

**Accreditation status:** our SANAS accreditation, based on ISO/IEC 17025: 2005 ensures that tests conducted are suitable for South African conditions and that the facility is also able to test to international requirements. In order to maintain our accreditation, the test facility is subject to internal quality audits and annual surveillance audits by SANAS. We are currently transitioning to ISO/IEC 17025: 2015;

**Technical expertise:** Our technical specialists are members of various local and international electro-technical committees and forums to ensure that they are at the forefront of all developments;

**Consistent testing:** We pride ourselves on the reliability and thoroughness of our testing procedures and reporting;

**Testing capacity:** At NETFA, we have four technical focus areas and a range of testing services that can be provided at the same time. As the first facility in Africa to have tested at 765 kV in the 1980s – the facility is well known for its high power testing capabilities;

**Collaborative approach:** We understand the industry and its challenges, We adopt a collaborative approach to solve problems, ensuring that we do not compromise on the quality of our test methods and procedures. Collaboration includes on site testing, partnerships with other laboratories (nationally and internationally) and varying types of tests;

**Turnaround times:** While the nature of some stress tests require certain duration testing, NETFA excels in tests like radio influence voltage (RIV) tests, with a 24 hour turnaround time in conducting tests and completing a test report.



*“At NETFA, we have four technical focus areas and a range of test services”*

	<b>High Voltage</b>
<b>Laboratory features</b>	<ul style="list-style-type: none"> <li>• Fully screened indoor laboratory and outdoor test facility for the generation and measurement of impulse and AC withstand voltages up to 4,6 MV and 1.3 MV respectively</li> <li>• Partial discharge can be measured down to 1 pC at 650 kV</li> </ul>
<b>Types of equipment tested</b>	<ul style="list-style-type: none"> <li>• Testing of high voltage equipment</li> <li>• Transformers</li> <li>• Various transmission line equipment</li> <li>• Insulators and surge arrestors</li> <li>• Transmission towers</li> <li>• High voltage cables</li> <li>• Testing of bushings</li> <li>• GIS substation testing</li> <li>• Corona and RIV testing of overhead conductors and electrical hardware</li> </ul>
<b>Typical tests performed</b>	<ul style="list-style-type: none"> <li>• Voltage and current impulse</li> <li>• Tan delta measurements</li> <li>• Partial discharge measurements</li> <li>• Wet and dry power frequency</li> <li>• Visible corona</li> <li>• RIV tests</li> <li>• Ageing tests on MV cables</li> <li>• High voltage and high current (power frequency and impulse)</li> </ul>
<b>Laboratory equipment</b>	<ul style="list-style-type: none"> <li>• 4,6 MV Impulse generators (outdoor)</li> <li>• 3 MV Impulse generators (indoor)</li> <li>• 650 kV AC transformers (indoor)</li> <li>• 1,3 MV AC transformers (outdoor)</li> </ul>

Short Circuit	Materials & Installation
<ul style="list-style-type: none"> <li>The only short circuit facility of 80 kA and only temperature rise facility of 10 kA in the southern hemisphere</li> <li>The only generator driven, high power plant in the southern hemisphere=</li> <li>Modern, computerised measurement systems</li> </ul>	<ul style="list-style-type: none"> <li>Physical and electrical testing on cables and wires</li> <li>Full testing of plugs and sockets</li> <li>Joint and termination test rig.</li> </ul>
<ul style="list-style-type: none"> <li>Distribution transformers</li> <li>Mini circuit breakers</li> <li>Low voltage assemblies</li> <li>Portable earthing gear</li> <li>Earth leakage devices</li> <li>Cables and overhead conductors</li> <li>Switchgear</li> <li>Switches</li> <li>Switch-Fuse Combinations</li> <li>Transformers</li> <li>Reactors</li> <li>Line Traps</li> <li>Instrument transformers</li> <li>Auto-reclosers</li> </ul>	<ul style="list-style-type: none"> <li>PILC, XLPE, PVC and rubber electric cables</li> <li>MV and LV ABC cable</li> <li>Cable compounds</li> <li>Overhead Conductors</li> <li>Lugs and ferrules (connectors)</li> <li>Cable accessories (joint and terminations)</li> <li>Electrical installation equipment, such as, plugs, socket outlets, appliance couplers, switches, adaptors, cord extension</li> <li>Electricians gloves Transformer oil</li> </ul>
<ul style="list-style-type: none"> <li>Short circuit testing up to 80 kA</li> <li>Short circuit of transformers up to 315 kVa</li> <li>Portable earthing gear testing</li> <li>Temperature rise tests up to 10 kA</li> <li>Short-time current withstand</li> <li>Internal arcing</li> <li>Load break switching</li> <li>Capacitive current switching</li> </ul>	<ul style="list-style-type: none"> <li>Testing electrical properties of Insulating and conductive materials</li> <li>Tensile properties</li> <li>Resistance and resistivity measurements</li> <li>Power frequency withstand and breakdown tests</li> <li>Tan delta and dissipation factor at 50 Hz and high frequency</li> <li>Glow-wire</li> <li>Physical, mechanical and electrical tests</li> <li>Load cycling</li> <li>Flexing tests</li> <li>Partial discharge</li> <li>Water Blocking</li> </ul>
<ul style="list-style-type: none"> <li>5 kA and 10 kV transformers for temperature rise testing</li> <li>Shunts, reactors and resistors</li> <li>Scada, PLC and measurements system</li> <li>Buck boost transformers</li> <li>NECRT (Neutral compensator with resistor and transformer)</li> <li>80kA high current plant</li> <li>14 kV and 32,5 kA high power plant</li> <li>10 kA circuit breaker testing plant</li> </ul>	<ul style="list-style-type: none"> <li>Joint and termination test rig</li> <li>Profile projectors</li> <li>Tensile test machines</li> <li>Material ageing ovens</li> <li>Material conditioning fridges</li> </ul>

# Distribution Technology

Distribution Technology operates as an independent unit within NETFA to enable customers to perform 1<sup>st</sup> party laboratory testing at their sites. Considering that electrical equipment is generally expensive and bulky to transport, the technical experts at NETFA are able to offer on-site testing services.

## Specialised Services:

- Assessments of LV switchgear and control gear in installations
- Implementing system safety and performance
- Inspections for specified performance
- Creating linkages for support and other SABS services, such as Certification, Local Content verification, training on standards, participation in technical committees
- Identifying related processes and requirements for continual improvements
- Independent third party investigation, testing and reporting
- protection requirements for buildings and structures against damages due to lightning flashes

## Our Expertise

Our employees are technical experts, with years of expertise in the electro-technical field. Their high levels of skills and knowledge are contemporary and at the forefront of global advancements, with participation at various international and local standardisation and technical bodies. Our customers can expect professional, ethical and efficient service from the NETFA team.

## Local Content Designated Sectors and products

SABS is the national appointed agency to verify local content of goods. Verification is conducted against the South African National Standard (SANS 1286:2017) for determining local content.

Amendments to the Preferential Procurement Policy Framework Act, (No. 5 of 2000) has allowed for increased local content production within the economy. All suppliers tendering for goods, works and service contracts within the public sector will have to comply with the local content criteria applicable to the designated sector. The National Treasury has issued instruction notes detailing the local content criteria which have been determined by the Department of Trade and Industry (the dti) and applicable to the respective designated sectors.



**The electro-technical sector is designated, with the following products, amongst others, being listed:**

- Transformers, shunt reactors and associated equipment
- Steel power pylons
- Electrical cable products (low voltage and medium voltage)
- Residential electrical meters
- Solar Water Heater Components

Suppliers are required to submit a “declaration of local content” form when submitting their proposal for tenders. Once awarded a tender, suppliers will be required to undergo a local content verification conducted by the SABS.

## **Local Content for Mining Goods**

The draft Mining Charter sets out a different set of requirements than the designated sectors and is applicable to all suppliers providing products to the South African mining industry.

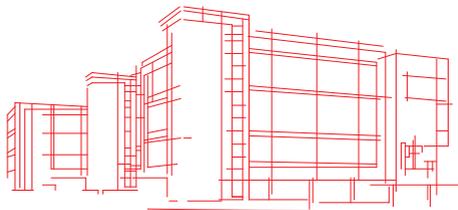
All suppliers need to be verified to confirm if their expenditure is above or equal to the stipulated percentage. 70% of the total mining goods procurement budget must be spent on South African manufactured goods with a 60% local content value sourced from compliant manufacturing companies.

# Our products and services

<b>Testing</b>	<p>SABS provides testing services in various test areas. SABS laboratories are accredited to ISO/IEC 17025:2005 and located throughout the country. NETFA is the primary facility that conducts electro-technical tests in Africa.</p>
<b>SABS Mark</b>	<p>The SABS Mark, is recognised locally and globally as the mark of quality. The SABS Mark Scheme is an accredited certification scheme that enables manufacturers to assure consumers that their products have been independently tested, verified and certified by SABS.</p>
<b>Standards</b>	<p>SABS is the national body responsible for the development and maintenance of standards in the country, to ensure that inclusive participation and competitive trade is possible. We welcome stakeholders to participate in our technical committees that develop standards. Standards are available to purchase, via our website <a href="http://www.sabs.co.za">www.sabs.co.za</a></p>
<b>Training</b>	<p>SABS offers system management and product standardisation courses that can be customised for groups of ten or more. For more information about upcoming training courses please visit on our website.</p>
<b>SMMEs and entrepreneurial development</b>	<p>SABS is able to assist SMMEs and entrepreneurs in the electro-technical sector. Our Design Institute is able to assist entrepreneurs refine their business ideas to ensure that creation and stimulation of local economy is realised. Our SMME department provides specialised services to assist SMMEs with compliance to standards and by creating linkages that will contribute to the national Industrial Policy Action Plan.</p>
<b>Consulting and Advisory</b>	<p>Our expert staff are part of various councils, international bodies and consulting panels and are able to offer valuable, independent consulting and advisory services.</p>
<b>Research and development</b>	<p>We have technical experts who are members of various research and development forums that will be able to offer problem solving, trouble shooting or fault detection services.</p>
<b>Local content verification</b>	<p>We have been appointed by government to conduct local verification services in accordance with Preferential Procurement Policy Framework Act (PPPFA) regulations, to ensure that local content criteria in specialised procurement deals are verified.</p>

<b>Consignment inspection</b>	SABS offers independent consignment inspection services to provide assurance that the content of consignments meet the production and quality requirements.
<b>Certificate of Compliance</b>	In partnership with the Independent Communications Authority of South Africa (ICASA), SABS issues certificates of compliance (COCs) to support the electro-technical industry. This service is rendered for electromagnetic interference and electromagnetic conformity (EMI/EMC) products, to ensure that only products that have been certified as safe and reliable will be allowed into South Africa.
<b>Conformity of Production</b>	This type of certification relates to the food industry. SABS certifies that the refrigeration/cooling units are able to maintain the required temperatures to ensure that food is transported safely and efficiently.





**Head office:**  
1 Dr Lategan Road  
Groenkloof  
Pretoria  
0001

**Postal address:**  
Private Bag X191  
Pretoria  
0001

**Telephone number:**  
+ 27 12 428 7911 or  
0861 277 227

**Fax number:**  
+ 27 12 344 1568

**E-mail address:**  
[info@sabs.co.za](mailto:info@sabs.co.za)

**Website:**  
[www.sabs.co.za](http://www.sabs.co.za)



@SABSapproved



@SABSapproved



SABS Approved



South African Bureau of Standards